CITY OF PORTLAND
ENVIRONMENTAL SERVICES
1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204-1912 ▪ Sam Adams, Commissioner ▪ Dean Marriott, Director

January 29, 2007

Mr. Tom Gainer
Department of Environmental Quality
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-4987

Subject: Stormwater Monitoring Work Plan (Revision No. 1), Prepared for GE Energy Portland Inspection & Repair Services Center

Dear Mr. Gainer:

The City of Portland Bureau of Environmental Services (City) appreciates this opportunity to provide comments to the Oregon Department of Environmental Quality (DEQ) from our review of the *Storm Water Monitoring Work Plan (Revision No. 1),* prepared by AMEC Earth & Environmental Inc., for GE Energy –Energy Services, Portland Inspection & Repair Services (GE I&RS) Center dated January 2007. The City's review focused on the evaluation of potential contaminant discharges to the City stormwater and combined conveyance systems from the GE I&RS Center.

The GE I&RS site, at 2727 NW 29th Avenue, discharges stormwater to the Willamette River via City Outfall 17, which is within the Portland Harbor Study Area. Sampling within the City conveyance system adjacent to the GE I&RS site and subsequent GE sampling identified the site as a contributor of PCB contaminants to the City Outfall 17 stormwater conveyance system. Over the past 6 months GE has completed significant source control actions aimed at addressing offsite migration of contamination via the stormwater pathway at their site.

The JCSC recognizes the need for some sites to go beyond a screening level assessment and estimate the contaminant mass loading to the river. Mass loading of PCB congeners is an important part of DEQ's in-water fate and transport model to evaluate in-river conditions. Because this project is evaluating the effectiveness of the site's PCB source control actions and this particular contaminant is expected to be a risk-driver in the in-river RI/FS, DEQ has requested GE to conduct a more comprehensive characterization of stormwater discharges from the site. The City comments presented below are based DEQ's request that the site quantitative characterize their potential contaminant loading to the river.

The City appreciates the effort, by DEQ and GE I&RS, to evaluate contaminant discharges through the stormwater pathway and to develop a comprehensive stormwater investigation program. In support of this objective, the City offers the following specific comments on this proposed stormwater monitoring work plan.

Comments by Section:

Section 3.1 Sampling Event Criteria and Frequency

The work plan proposes to evaluate stormwater during four stormwater events with manually flow-weighted composite samples, and to collect one stormwater catch basin solid sample from each catch basin (dependent upon available volume). The work plan includes both total and dissolved analyses on the water samples, which will assist with understanding the suspended solids. However, the plan does not propose a method (quantitative or qualitative) to monitor for, or measure, the potential discharge of settleable solids from the facility downstream of the treatment systems.

To evaluate contaminant contributions in the solid fraction, which may not be detected by methods utilized for stormwater analysis, the City suggests that the site include a way to measure the settleable solids (and associated contaminant concentrations, if applicable) following the on-site stormwater treatment. Possible approaches include sediment traps and/or high-volume filtering for analysis of stormwater solids. This measurement is also an important component in evaluating the effectiveness of the treatment systems.

Section 3.1.1 Storm Water Sampling
The City operates rain gauges at 3395 NW Yeon Avenue and 2033 NW Glisan Street. Data can be accessed online at http://or.water.usgs.gov/non-usgs/bes/raingage_info/clickmap.html. Site rain gauge performance could be cross-checked with this data.

Section 3.2 Monitoring and Sampling Locations
Clarification should be added to indicate that individual solids samples will be collected from each of the five catch basins as part of this work plan.

Section 3.3.2 Field Indicator Measurements
Automated measurements of rainfall and discharge flow rates throughout the storm event is proposed. The monitoring intervals for the rain gauge and flow meters should not exceed 15 minutes to facilitate manual flow-weighting of the stormwater aliquots.

Section 3.4.1 Storm Water Sampling
Compositing Approach: The plan proposes to create a flow-weighted composite by adjusting subsample (aliquot) volumes to be proportional to flow discharge volumes, over specific aliquot collection intervals, prior to compositing aliquots for each location. However, rationale has not been provided for the proposed programming scheme to utilize different aliquot sizes and sampling intervals over the course of the storm event. As proposed, a 950-ml aliquot will be collected every fifteen minutes for the first three hours of storm discharge, followed by collection of a 350-ml aliquot each hour for up to 21 hours; the minimum three-hour storm will generate 12 aliquots (total of 11.4 liters), and the maximum 24-hour storm will generate 33 aliquots (total of 18.75 liters).

Because aliquot volumes for the two periods vary, any storm exceeding three hours will include aliquots with a maximum volume of 350 ml. To form the composite, the sampling interval with the peak discharge volume will be identified, and that aliquot contribution to the composite will be established at 100%. All other aliquot volumes will be adjusted proportional to flow discharge volumes over each respective sampling interval. If peak flow periods occur during the 3 – 24-hour period of a storm, maximum aliquot contribution will be 350 ml – storm events slightly longer than 3 hours will not generate composites of sufficient sample volume to meet analytical requirements.

Peak storm flows do not always occur within the first three hours of runoff. Based on City experience with stormwater sampling, this approach has a high probability of generating a composite sample of insufficient volume to meet analytical needs. In addition, sampler calibration can slip and intake lines can kink or plug resulting in reduced aliquot volumes.

Technical justification for the proposed compositing scheme should be provided. To ensure collection of a representative composite sample, the City recommends either pacing the sampler with the flow meter, based on calculated discharge volumes per storm event or collecting uniform volumes per timed sampling interval for the duration of the storm.

Filtering: A sufficient volume of water will be collected during each storm event to submit samples to the laboratory for total and dissolved chemical analyses. The work plan proposes filtering the water sample, prior to submittal to the laboratory, using a 0.1 micron polyvinylidene fluoride (PVDF) filter. The size of filter material used by the Lower Willamette Group (LWG) in their in-river water monitoring to subsample for dissolved water analyses is 0.45 micron for metals and 0.5 micron for organic tests. Although the GE work plan rationale states the 0.1 micron filter size is to assure removal of colloidal solids, it is unclear how this different dataset will be useable for comparison or incorporation into the Portland Harbor RI analysis. DEQ should require use of the same filter sizes within the Portland Harbor project area for data consistency and comparability.

Proposed Stormwater Sample Analyses: JSCS screening levels for PCBs are based on PCB Aroclors, though in-river risk assessment relies on PCB congener data. PCB congener analysis should be required for this characterization so that data can be used in the DEQ fate and transport model.

Section 3.4.2 Catch Basin Solids Sampling

It is assumed that catch basin solids sampling will be conducted during dry weather conditions. The analyte list for catch basin solids is generally complete. To assist with data evaluation, the City suggests that stormwater solids analysis include total organic carbon (TOC). Target sample volumes (two 9-ounce jars) conflict with volumes listed in Table 1 and Table 2.

Section 3.5.1 QC Sample Collection Requirements

QC samples should include field duplicates for both stormwater and catch basin solids, if sufficient sample volumes are available. The target composite volume of eight liters (Table 1) may not be adequate to address QC requirements.

Section 3.5.2 Sample Containers

Are the automatic sampler bottles and all the containers used for manual compositing provided by the laboratory? The work plan should describe how they will be decontaminated and stored between uses.

Section 6.1 Data Validation Review

Procedures for validating flow and rain gauge data should be provided.

Section 6.2 Sampling Report
The sampling report should include flow data and compositing information to facilitate a loading evaluation for each site drainage basin. Compositing information should include collection times for each aliquot include in the composite sample.

Table 1
Catch basin solids sample volume should be adjusted to reflect total volume needed for all targeted analyses. Proposed analyses for catch basin solids should include TOC.

Table 2
Analytical priorities should be identified, so that highest priority analyses are conducted in the event of insufficient sample volume.

Table 3
Table 3 presents the Project Screening Level Values that are based upon the JSCS SLV tables; there were some inaccuracies in the table. The following SLVs need to be made corrected to reflect the JSCS SLVs:

Stormwater SLVs
Human Health Fish Consumption: Cadmium, Di-n-octylphthalate
Human Health Ingestion: Dimethylphthalate
Ecological: Antimony, Silver

Catch Basin SLVs
Toxicity: Diethylphthalate, Total PCBs
Bioaccumulation: Di-n-butylphthalate

SOP-1 Storm Water Handling and Compositing Procedures
Section 1.0 Purpose: It isn't clear why details on catch basin observations are included in this SOP. Sections 3.0, 3.1, and 3.2 should be modified and added to SOP-4 or the purpose of this SOP should be expanded to include catch basin visual assessments.

Section 3.0 Catch Basin Monitoring: Further detail is needed to specify when the proposed round of catch basin sediment samples will be collected (e.g., during dry weather, as soon as sufficient volume is present, at the conclusion of the stormwater monitoring period, etc.).

Section 4.0 Storm Water Sample Collection Procedure: What type of sample intake and pump tubing will be utilized for sampling?

Section 6.0 Discharge Flow Rate Determination: Flow data will be needed for stormwater compositing. Flow data collection intervals should be equal or less than the shortest sampling interval.

Section 7.1 Stormwater Composite Preparation Procedure: Additional information is needed in this section to describe the decision path that will be used to generate a representative composite sample from collected aliquots. Considerations include reduced aliquot volumes, missed aliquots, and storm event definition in the event of intermittent storm discharges.

This section should also present how the occurrence of settleable solids within an individual or composite sample container will be handled during the manual compositing work (e.g. use of churn splitter). How will the environment, where samples are composited, be controlled to avoid sample cross-contamination?

Section 7.3 Site-Specific Sample Containers: The list of constituents for stormwater sample analysis is different than that presented in the main body of the Work Plan (Section 3.4.1). Numbers 4 and 6 in the SOP do not include both the "total and dissolved" category of analysis. This discrepancy should be addressed.

Table B-4

Target method detection limits and reporting limits for stormwater samples based on the specific JSCS SLVs are identified in Table B-4. Table B-4 should annotate several additional compounds with the comment "Analyte must be reported to method detection limit." These compounds include chrysene, benzo(b)fluoranthene, benzo(a)pyrene, arsenic, and lead.

Thank you for your consideration of these comments. Please feel free to contact me at (503) 823-2296 if you have any questions regarding this letter.

Sincerely,

Linda Scheffler
Water Resources Program Manager
Superfund Program

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